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(54) Title: MAGNETIC RESONANCE IMAGING OF METAL CONCENTRATIONS

(57) Abstract: Provided herein is a method of magnetic resonance imaging (MRI) for *in vivo* mapping of concentration of a target metal ion in at least one tissue using a contrast agent selectively sensitive for the amount of target metal ion where the contrast agent itself contains a non-hydrogen imaging nucleus. Also provided a method of diagnosing a disease state and of monitoring the efficacy of a therapeutic regimen to treat the disease state using the magnetic resonance imaging methods.

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/US03/16935

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : A61B 5/055  
 US CL : 424/9.3, 9.36, 9.364, 9.37

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
 U.S. : 424/9.3, 9.36, 9.364, 9.37; 600/410,420

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
 Please See Continuation Sheet

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5, 188,816 A (SHERRY et al) 23 February 1993 (23.02.1993), see entire document.	1-3,5,9,11- 16,20,21,23,25 and 27-29
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Y		1-36
Y	US 5,834,466 A (RAMASAMY et al) 10 November 1998 (10.11.1998), see column 12, lines 3+.	1-36
Y	US 5,690,905 A (ZAMORA et al) 25 November 1997 (25.11.1997), see abstract and column 2.	1-36

Further documents are listed in the continuation of Box C.

See patent family annex.

* Special categories of cited documents:	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E" earlier application or patent published on or after the international filing date	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&"	document member of the same patent family
"O" document referring to an oral disclosure, use, exhibition or other means		
"P" document published prior to the international filing date but later than the priority date claimed		

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INTERNATIONAL SEARCH REPORT

PCT/US03/164

**Continuation of B. FIELDS SEARCHED Item 3:**

**APS**

search terms: metal, concentration, measuring, MRI, NMR, MR, resonance, Zn, zinc, copper, Cu, F-19, EDTA, EGTA, BAPTA, imaging, targeting.